grated bipolar sensing (Guidant, Inc., St. Paul, MN) and were digitally recorded to 1000Hz then decimated to simulate the computation environment of an ICD. For each shock event, correlation waveform analysis was used to compare serial post-shock intracardiac electrogram against a baseline template created from the last 5 intracardiac electrograms before the ICD shock. Time to recovery to 90% of baseline was measured in each patient. Results: In the 24 patients studied, electrograms after 120 ICD shocks were analyzed. Nine patients (39%) had significant changes in electrogram morphology after an ICD shock. Time to recovery was 9.3±14.3sec after an 11J shock, 38.6±28.7sec after a 21J shock and 45.5±37.1 sec after a 31J shock. No changes in electrogram morphology were observed after a 1J shock. A direct correlation existed between the delivered shock energy and the time to reversion of the intracardiac electrogram to the baseline template(r=0.45, p=0.01). Patients receiving angiotensin-converting-enzyme (ACE) inhibitor therapy had less electrogram morphology distortions (16.7%) than those not taking ACE inhibitors (63.6%, p=0.03). Conclusions: Delivered shock energy and ACE inhibitor therapy can affect distortions in the stored intracardiac electrogram morphology after ICD shocks. This suggests that physiologic factors play a significant role in the observed changes of stored electrogram recordings.

1018-110 Outcome of a Device-Based Atrial Rhythm Control Strategy in Patients With Chronic Congestive Heart Failure and Diminished Ejection Fraction

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Background: We report an interim assessment of a "device-based" strategy for atrial rhythm control in patients with drug-refractory AF, chronic CHF and reduced left ventricular EF (<40%). Methods: Each patient underwent implantation of a Medtronic Jewel AF (model 7250 device) system. This device incorporates atrial prevention/termination pacing and shock therapies. The device also provides bradycardia pacing and VT/VF therapies. The cohort consists of 32 patients (30 men; mean age 58 yrs; cause of reduced EF: ischemic [18], idiopathic [10], other [4]) with symptomatic, drug refractory AF, who have been followed for 246 +/- 196 days. Successful AF suppression was defined as AF burden <10% during followup. Results: Table shows mean(SD) values for pre-implant and latest followup (post-implant) in pts with successful AF suppression, which was achieved in 27 pts (84%), necessitating adjuvant antiarrhythmic drug therapy in 24 of these pts. There have been 8 deaths (all attributable to pump failure; 7 of 8 patients experienced AF suppression), 1 transplant and 1 ventricular assist device implantation. No device-related proarrhythmia was observed. Device therapy for previously undiagnosed VT/VF has occurred in 3 (9%) patients. Conclusions: during short-term followup, device-based atrial rhythm control in this population was feasible, safe, and associated with stable EF, LA/LV volumes, and NYHA class. Therapies for "new" VT/VF were not uncommon.

	Pre-Implant	Post-Implant
EF (%)	30(10)	34(14)
LV Volume (cc)	152(54)	186(68)
LA Volume (cc)	148(53)	151(43)
NYHA Class	2.1(0.9)	2.1(1.0)

1018-111 Importance of Avoiding Nominal Programming to Prevent Inappropriate Implantable Cardioverter Defibrillator Shocks

Andrea M. Russo, Henry Hsia, David Callans, Christa Schorr, Maureen Nicholas, Dusan Kocovic, Francis E. Marchlinski, *University of Pennsylvania Health System, Philadelphia, Pennsylvania.*

Background: Prophylactic use of implantable cardioverter defibrillators (ICDs) raises increased awareness about the need to avoid inappropriate shocks for supraventricular arrhythmias (SVAs).
Methods: Ninety-one pts without prior clinical sustained ventricular arrhythmias (VAs) received prophylactic ICDs; 46 pts presented with syncope and a dilated cardiomyopathy and 45 pts had no symptoms with coronary disease and inducible ventricular tachycardia (VT). During a follow-up of 21 +/- 18 months, 21 pts (23%) experienced therapy for VAs and 13 pts (14%) for SVAs. We examined clinical VT and SVA rates.
Results: Mean age was 60 +/- 15 yrs and LVEF 25 +/- 9%. Devices were programmed to a "single zone, shock only" configuration in 29 pts, with 2 zones in 5 pts.
Only 2/21 pts (10%) had a clinical VT rate of < 190 bpm (both with inducible VT). The SVA suggested atrial fibrillation 8 pts, atrial tachycardia 3 pts, and sinus tachycardia 2 pts.
Conclusions: (1) Inappropriate shock therapy occurs in 14% of pts receiving prophylactic ICDs during a short follow-up. (2) Despite availability of VT zones and detection enhancements, devices are frequently programmed to a "shock only" zone with a low rate cut-off. (3) Although there is some overlap between VT and SVA rates, VT rates are rarely <190 bpm in the absence of inducible VT. (4) Avoidance of programming to nominal VF detection rates may prevent inappropriate shock therapy for SVAs. The potential role of programming a second zone with detection enhancements needs to be examined.

***p value < 0.01, comparing clinical VT vs. SVA rates**

Rate(bpm)	VF zone	VT zone	Clinical VT rate*	Clinical SVA rate*
N =			21 pts	13 pts
Mean +/- SD	182 +/- 13	161 +/- 10	221 +/- 38	179 +/- 14
Range	160 - 214	150 - 175	188 - 308	160 - 200

POSTER SESSION

1019 Noninvasive Testing: Predicting Arrhythmic Events

Sunday, March 17, 2002, 9:00 a.m.-11:00 a.m.
Georgia World Congress Center, Hall G
Presentation Hour: 10:00 a.m.-11:00 a.m.

1019-112 The Evolution of Serial P Wave Signal-Averaged Electrocardiograms Following Direct Current Cardioversion of Atrial Fibrillation: A Prospective Study

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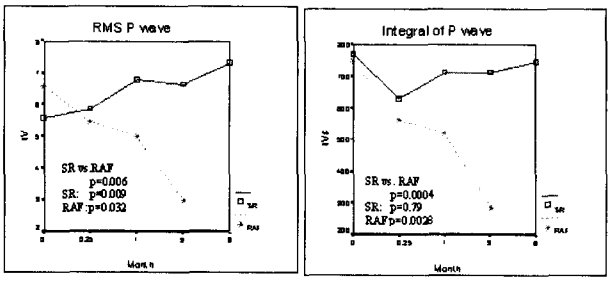
Background: The evolution of serial P wave signal-averaged ECG (P-SAECG) after DC cardioversion (DCC) of persistent atrial fibrillation (AF) was studied. Method: 60 pts underwent P-SAECG at regular intervals, 5 times over 6 months. Filtered P wave duration (PD), root mean square voltage (RMS) of its terminal 40, 30, 20 ms, entire P wave and integral P wave were obtained using a FFT filter of 40-250 Hz with P wave triggered technique (GE, USA). Results: Of 60 pts (53 men, 66 ± 10 yrs), 31 (52%), 11 (18%), 2 (3.3%), 2 (3.3%) pts returned to AF (RAF) in 0.25, 1, 3, 6 months respectively. There were no significant differences in age, sex, cardiac disease, AF duration, left atrial size between pts with and without RAF at 6 months. General linear model regression showed RAF group had prolonged PD (157 ± 24 vs 143 ± 17ms, p<0.0001) and lower RMS 40, 30, 20 when compared with pts who maintained sinus rhythm (SR) (5.3±2.0 vs 6.1 ± 3.4mV, p=0.007; 4.3 ± 1.5 vs 5.7 ± 3.2mV, p<0.0001; 3.6 ± 1.4 vs 5.2 ±3.0, p<0.0001 respectively), these measurements did not change significantly over time in each outcome group. Only RMS-P and integral P evolved against time (Fig). In slope, the RMS-p in SR pts increased (p=0.009), whilst a reduction was noted in RAF pts (p=0.032) (difference in slopes p=0.006). For integral-p, no change in SR group but in RAF slope was significantly decreased (p=0.0028), (difference in slopes p=0.0004). Conclusion: These differences in evolution suggest that returned AF is preceded by change in serial P-SAECG following DCC.



1019-113 Atrial Fibrillation Recurrence: The Roles Of Hypertension, Duration Of Atrial Fibrillation, and Prolonged Signal-Averaged P Wave Duration

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Background-Prolonged signal-averaged P wave duration (SAPD) has been established as a risk marker for atrial fibrillation (AF). We assessed the risk of hospitalization due to AF recurrence or transition to long-lasting AF in patients with earlier or present AF in relation to the SAPD, clinical characteristics of the patients, and the duration of the AF disease.
Methods-In 111 consecutive patients (71/40 men/women; median age 65 years, range 30-85 years) with earlier or present AF the SAPD was measured at inclusion, and the follow-up time was six months (median 184 days; range 171-437 days). Hospitalization due to AF recurrence or transition to long-lasting AF were regarded as endpoints.
Results-During the follow-up period 33 patients were hospitalized due to AF, and nine patients developed long-lasting AF. History of hypertension, OR=3.67 (95% CI 1.61 to 8.37), duration of the AF disease longer than two years, OR=3.22 (95% CI 1.31 to 7.86), and non-significantly prolonged SAPD above 140 ms, OR=1.87 (95% CI 0.60 to 5.82) were related to an increased risk of hospitalization due to AF relapse or development of long-lasting AF.
Conclusions-Hypertensive heart disease, duration of AF disease longer than 2 years, and prolonged SAPD above 140 ms were risk factors for AF relapse requiring hospitalization or transition to long-lasting AF. The probability of recurrence in patients without risk factors was 9%, with one risk factor 16-27%, with two risk factors 37-54%, and with all three risk factors 74% (Table 1).

Table 1: Probabilities of hospitalisation or transition to long-lasting AF from risk factors (%)

	No hypertension	No hypertension	Hypertension	Hypertension
SAPD	< 140 ms	> 140 ms	< 140 ms	> 140 ms
Short duration of AF (< 2 years)	9	16	27	47
Long duration of AF (> 2 years)	24	37	54	74